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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,609	03/18/2004	Mark H. Eskridge	H0005288	9561
128	7590	11/02/2006	EXAMINER	
HONEYWELL INTERNATIONAL INC. 101 COLUMBIA ROAD P O BOX 2245 MORRISTOWN, NJ 07962-2245			NGUYEN, DILINH P	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/804,609

Applicant(s)

ESKRIDGE, MARK H.

Examiner

DiLinh Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (fig. 4) (previously applied) in view of Ellsberry et al. (U.S. Pub. 2005/0051903) (previously applied).

Regarding claim 19, AAPA (fig. 4) disclose a micro-electromechanical system (MEMS) device, comprising:

a pair of mutually spaced apart first and second substrates 14 and 20 having mutually opposing inner surfaces;

a semiconductor silicon mechanism substrate 16 mechanically coupled to one of the inner surfaces and having a micro-machined capacitive acceleration sensor mechanism patterned therein;

an electrode 38 formed on the inner surface of the substrate;

a metal chip bond pad 24 formed on the inner surface of the bottom substrate and being electrically coupled to an electrical path 24;

one or more mesas spacing the electrodes on the first and second mutually opposing inner substrate surfaces substantially symmetrically from respective first and second surfaces of the capacitive acceleration sensor mechanism (fig. 4).

AAPA (fig. 4) does not disclose a plurality of metal chip bond pads formed on the inner surfaces of the top and bottom substrates and a gold stud bump between the chip bond pads on the top and bottom substrates.

However, Ellsberry et al. disclose a semiconductor device comprising:  
electrodes formed on each of the first and second mutually opposing inner substrate surfaces;

one pair of complementary metal chip bond pads formed on the first and second mutually opposing inner substrate surfaces;

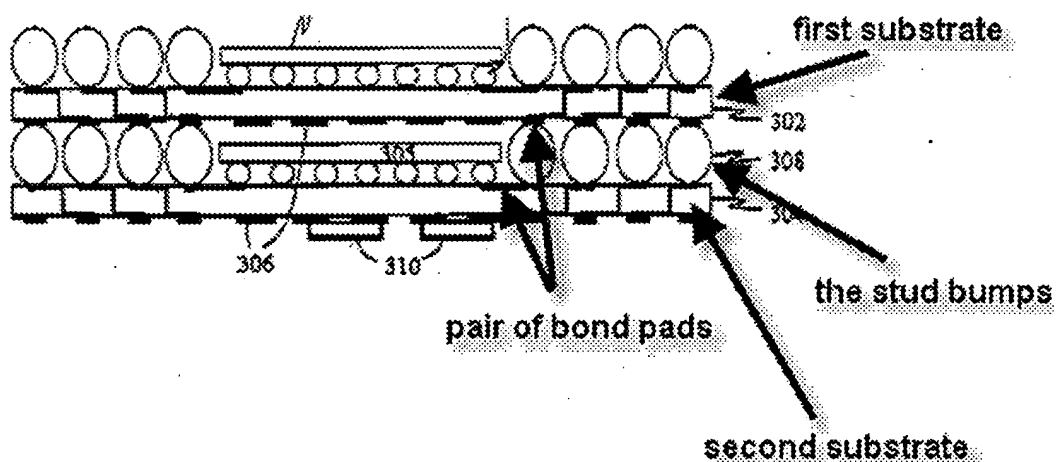
an electrical conductive path formed between one of the electrodes and one of the chip bond pads on a corresponding one of the first and second mutually opposing inner substrate surfaces; and

a gold stud bump (paragraph 0021) mechanically and electrically coupled between the chip bond pads on the top and bottom substrates (cover fig). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device structure of AAPA by having a plurality of metal chip bond pads formed on the inner surfaces of the top, bottom substrates and a gold stud bump between the chip bond pads on the top and bottom substrates because as taught by Ellsberry et al., in order to provide an electrical path between the top and bottom surfaces of the substrates (cover fig.).

- Regarding claim 20, Ellsberry et al. disclose that an electrical path formed on the inner surface of the top substrate 302 and being electrically coupled to the chip bond pad (cover fig.).

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- Regarding claim 21, Ellsbery et al. disclose that a plurality of wire bond pads formed on one of the first and second mutually opposing inner substrate surfaces and an electrically conductive path formed between one of the chip bond pads and one of the wire bond pads (cover fig.).
- Regarding claim 22, AAPA discloses that the semiconductor silicon mechanism substrate having the micro-machined capacitive acceleration sensor mechanism patterned therein is mechanically coupled to the inner surface of the first substrate; one or more mesas extend from the inner surface of the first substrate 20 and wire bond pads 26 or 24 are formed on the inner surface of the second substrate in an area remote from the sensor mechanism (fig. 4).



### ***Response to Arguments***

Applicant's arguments filed 8/11/06 have been fully considered but they are not persuasive.

- The applicant argues that there is no reference anywhere in the application

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indicates that the solder balls 108 or 306 are gold stud bumps and the underside coupling members or gold stud bumps 106, 303, 410 or 412 are not mechanically or electrically coupled between the chip bond pads on the top and bottom surfaces of the substrate.

The arguments have been fully considered but they are not persuasive because the device shown in cover fig. of Ellsberry et al. has plurality of conductive stud bumps, and Ellsberry et al., in paragraph 0021, clearly disclose that the conductive bumps or conductive balls are solder or gold balls. Thus, the conductive stud bump or conductive stud ball is gold stud bump and wherein the gold stud bump electrically and mechanically coupled between each of the pairs of complementary metal chip bond pads (see the above fig.).

It is noted that the elements upon which applicant relies (i.e., elements 108, 306, 106, 303, 410 or 412) are not recited in the examiner's office action.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DLN

  
PHAT X. CAO  
PRIMARY EXAMINER